

# Model SLA7840

Pressure



SLA7840 Remote Transducer  
Pressure/Flow Controllers

## High Purity, Metal Sealed, Digital, Remote Transducer Pressure/Flow Controller

### Overview

Brooks Instrument's Model SLA7840 is a 1-1/8" wide profile high purity metal sealed instrument that controls pressure while measuring flow rate. The Model SLA7840 receives a remote pressure transducer signal, and using adjustable integral PID control electronics and a control valve, maintains a desired set pressure. In addition to the pressure function, the Model SLA7840 provides a 0-5 V signal that is linear with mass flow rate. The Model SLA7840 can also be configured as a mass flow controller for calibration or test purposes.

### Superior Valve Technology

The co-planar valve offers unmatched performance. Due to its simplified construction, the valve exhibits superior repeatability, stability, and response time. Instruments are less sensitive to pressure variations in the process because of the larger valve control range. The co-planar valve also offers lower leak-by rates compared to other metal sealed controllers. These advancements ensure a more stable process over time.

### Highly Adaptable Configurations

The 1-1/8" body offers a compact, space saving footprint. The SLA7840 is easily retrofitable to existing gas box designs that utilize the traditional 1-1/2" body platform. Likewise, the all-digital electronics is adaptable and allows the SLA7840 to serve as a direct replacement for existing analog products bringing with it greatly improved accuracy and reliability.

### Broad Array of Communication Options

Brooks offers the Model SLA7840 with a traditional 0-5 volt analog option. Brooks also offers control interface with DeviceNet™, a high-speed (up to 500k baud) digital communication network. Brooks' communication capabilities and device-profiles have been certified by the ODVA (Open DeviceNet Vendor's Association). Other network protocols are in development. Talk to your Brooks representative about your specific needs.

### Reduced Cost of Ownership

The Model SLA7840 allows multi-gas and multi-range capabilities to reduce customer inventory. Storage and pre-programming of up to 10 gas calibrations easily permits users to switch between different gases and ranges on a single device. Also, the greater control range provided by the co-planar valve gives users the option to decrease the number of parts needed to control their entire process.

## Product Features

- 1-1/8" Mechanical Platform
- High Performance Co-Planar Valve
- All wetted parts 32 Ra maximum to maintain particle, moisture and contamination free process conditions
- All-Metal seals, High leak integrity (less than  $1 \times 10^{-10}$  atm-cc/sec He)
- Flow accuracy  $\pm 1\%$  of rate (or setpoint), including linearity to assure device is controlling precisely at desired level
- Digital Communication options offer easy commissioning and reduced system wiring
- Device can store 10 selectable calibrations and flow ranges
- CE Compliant

### Analog I/O:

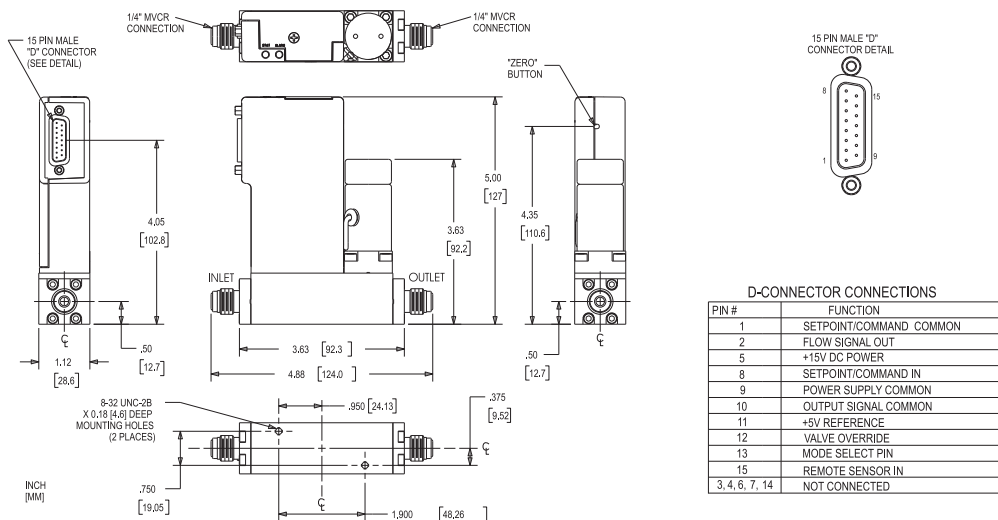
- 15-pin
- 0-5 Volt setpoint and flow signals
- Single sided +15 Volt DC power supply
- Separate 'valve-override' signal
- Compatible with Brooks' Model 0254 Series secondary electronics

### DeviceNet™ Communication Option:

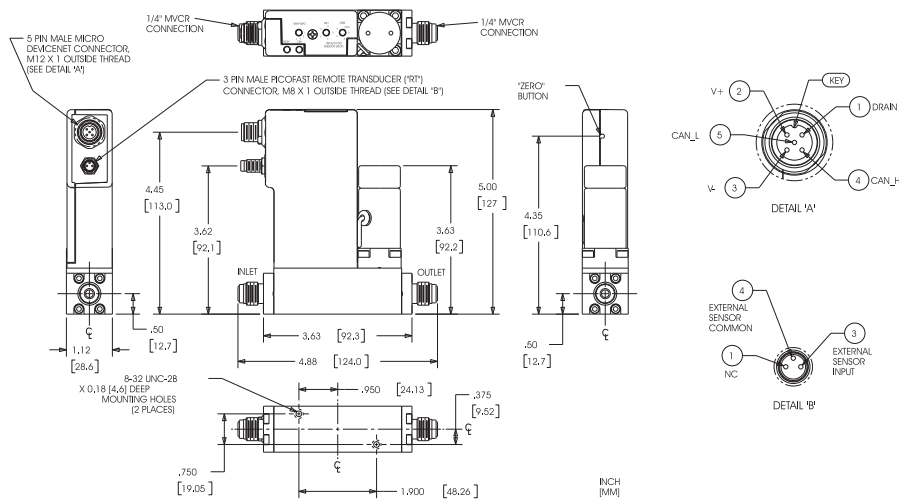
- Easy commissioning and reduced system wiring
- Accessibility of sensor, valve, calibration, tuning, diagnostic, and other internal data, to support fast commissioning and streamlining of controller insitu preventive maintenance
- MAC-ID, Baudrate rotary switches, and two bi-color status LEDs - to ease setup and addressing as well as status confirmation
- Vendor Specific Profile, ODVA certified
- Capabilities: Poll I/O, Cyclic, Change-of-State and explicit messaging

## Product Dimensions

SLA7840A Analog I/O Controller with 1/4" VCR Connections



SLA7840D Digital I/O DeviceNet Controller with 1/4" VCR Connections



## Product Specifications

Performance	SLA7840
Flow Range**	Any range from 0-3 sccm to 0-30,000 sccm N <sub>2</sub> eq.
Flow Control Range	33:1
Flow Accuracy	±1.0% of rate, including linearity (20% to 100%F.S.), ±0.2% of F.S. (below 20% full scale)
Flow Repeatability	±0.20% of rate
Flow Temperature Sensitivity	Zero: Less than 0.035% F.S. per °C; Span: Less than 0.1% of rate per °C
Flow Settling Time	Actual flow: Less than 1 second to within ±2% full scale of final value for a 0-100% step per SEMI Guideline E17-91
Pressure Ranges	Dependent upon remote transducer, maximum 500 psig.
External Sensor Input	Suitable for pressure sensors with maximum 0-10 Vdc output signals.
Pressure Control Range	20:1
Pressure Settling Time	Less than 1 second typical for a 20-100% setpoint step with maximum 2% overshoot. Actual pressure response highly dependent on system design.

### Ratings

Operating Pressure	500 psig maximum
Pressure Equipment Directive (PED) 97/23/EC	Equipment falls under Sound Engineering Practice (SEP)
Leak Integrity	Inboard to Outboard: 1x10 <sup>-10</sup> atm scc/sec Helium max.
Ambient Temperature Limits	Operating: 0°C to 60°C (32°F to 140°F); Non-Operating: -25°C to 100°C (-13°F to 212°F)
Fluid Temperature Limits	0°C to 65°C (32°F to 149°F)

### Mechanical

Wetted Materials	316L Vacuum Arc Remelt (VAR), 316L, and high-alloy ferritic stainless steel
	External/internal seals: Nickel; Valve seat: 316L stainless steel - standard
Surface Finish	32μ inch Ra maximum
Process Connections	1/4" male VCR™ (standard); C Seal (SEMI 2787.1); CS Seal (SEMI 2787.5); W Seal (SEMI 2787.3)

### Electrical

Electrical Connections	Analog I/O option: 15-pin D-Connector, male		
	DeviceNet I/O option: 5-pin Micro-Connector, male		
Power Supply Voltage	Analog I/O option: +15 Vdc, ±5% (traditional -15 Vdc pin is ignored)		
	Digital I/O DeviceNet option: 11-25 Vdc		
Power Requirements		Watts Typ.	Watts Max.
	Analog I/O option, with valve	3.6	4.0
	DeviceNet I/O option, with valve	6.9	7.6
Setpoint Input (Analog I/O option only)	0-5 Vdc: Input will accept signals to 5.5 Vdc (110% F.S.). Input resistance: 360 Kohm min.		
Flow Output (Analog I/O option only)	0-5 Vdc into 2 Kohm minimum load. Output will indicate process variable up to 5.5 Vdc (110% F.S.).		
Valve Override Signal (Analog I/O option only)	Left floating/unconnected – instrument controls valve to command setpoint		
	Connected to signal at or above 5.0 Volts (max. 16 Vdc) – valve is forced open		
	Connected to signal at or below 0.0 Volts (min. -1 Vdc) – valve is forced closed		
5 Volt Reference Signal (Analog I/O option)	For use with potentiometer command setpoint input ±0.2%, into 1Kohm (minimum load)		
Mode Select Signal (Analog I/O Only)	Select whether to control in external sensor mode (pressure) or flow mode		
	Open (disconnected) = unit operation in flow control mode		
	Closed (grounded) = unit operation in pressure control mode		
Remote Sensor Input	0-10 Vdc: Input will accept signals to 10.2 Vdc. Input resistance = 480 Kohm nominal		

\*\*Standard: 0° and 101kPa (760 Torr). Per SEMI Guideline E12-96.

## Brooks Service and Support

Brooks is committed to assuring all of our customers receive the ideal flow solution for their application, along with outstanding service and support to back it up. We operate first class repair facilities located around the world to provide rapid response and support. Each location utilizes primary standard calibration equipment to ensure accuracy and reliability for repairs and recalibration and is certified by our local Weights and Measures Authorities and traceable to the relevant International Standards.

Visit [www.BrooksInstrument.com](http://www.BrooksInstrument.com) to locate the service location nearest to you.

### START-UP SERVICE AND IN-SITU CALIBRATION

Brooks Instrument can provide start-up service prior to operation when required. For some process applications, where ISO-9001 Quality Certification is important, it is mandatory to verify and/or (re)calibrate the products periodically. In many cases this service can be provided under in-situ conditions, and the results will be traceable to the relevant international quality standards.

### CUSTOMER SEMINARS AND TRAINING

Brooks Instrument can provide customer seminars and dedicated training to engineers, end users, and maintenance persons.

*Please contact your nearest sales representative for more details.*

Due to Brooks Instrument's commitment to continuous improvement of our products, all specifications are subject to change without notice.

#### TRADEMARKS

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